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ABSTRACT

A study examined metacognition and teachers' perceptions of metacognitive instruction in elementary, middle, and high school. After an initial review of the literature, a survey instrument was developed and distributed to 288 teachers from elementary, middle, and high schools in a suburban area (Middlesex County, New Jersey). These teachers (both female and male) were from regular education, special education, and resource rooms. The survey instrument consisted of 14 reading strategies and asked the teachers if they modeled the strategy, taught the strategy and/or saw their students apply the strategy. Data collected were sorted by elementary, middle, and high school levels. Results of the survey showed that most often, there were more strategies modeled, taught, and applied with the children in the elementary level. For future research more high school staff should be included in the surveying. The purpose of this would be to see if the number of teachers who modeled and taught the strategies would increase along with the number of students who applied the strategy. Contains 48 references. A questionnaire is appended. (Author/NKA)

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Metacognition: Metacognitive Skills and Strategies in Young Readers

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Abstract

This report examines metacognition and teachers' perceptions of metacognitive instruction in elementary, middle, and high school. After initial review of the literature, the researcher distributed a survey instrument to 288 teachers from elementary, middle, and high schools in a suburban area. These teachers were from regular education, special education and resource room, both male and female. The survey instrument consisted of 14 reading strategies and asked the teachers if they modeled the strategy, taught the strategy and/or saw their students apply the strategy. The results of the survey showed that most often, there were more strategies modeled, taught, and applied with the children in the Elementary level. Discussion of these results are presented.

Metacognition

Barton, Freeman, Lewis, and Thompson (2001) say that the "Lack of metacognition limits a student's ability to move beyond the literal to higher levels of thinking" (p. 1). What is metacognition and how does it affect a student's ability to think and to comprehend? Barton, et al. continue by quoting Keene and Zimmermann (1997), "Metacognition is a turning inward purposely at first and automatically thereafter, to reexamine our processes of comprehending, changing interpretations of the text and our reflections in order to elaborate and deepen our own understanding of a text" (p. 6).

Burns, Roe, and Smith (2002) state that metacognition is a "person's knowledge of the intellectual functioning of his or her own mind and that person's conscious efforts to monitor or control this functioning. It involves analyzing the way thinking takes place" (p. 181). Later on Burns, et al. continue sharing that this "involves knowing what is already known, knowing when understanding of new material has been accomplished, knowing how the understanding was reached, and knowing why something is not known" (p. 354).

Gil, Osiecki, and Juarez (2001) delve back to the late 1800's and cited Hype and Bizar's (1989) early definition of metacognition as "a process where the individual carefully considers thought in problem solving situations through the strategies of self-planning, self-monitoring, self-regulating, self-questioning, self-reflecting, or self-reviewing" (p. 1). Gil, et al. also moved forward in history to Flavell (1979) who said that metacognition was the "active monitoring and consequent regulation and orchestration of mental processes" (p.1). They looked at other researchers who defined the term as "an

internal dialogue" (Weir, 1998), "a self-regulatory process"(Gourgey, 1998), "the awareness of one's thinking"(ERS, 1999), "goal-setting, self-instruction, self-monitoring, and self-reinforcement"(Graham, Harris and Reid, 1992), and "reflecting on what one knows and self-regulating learning" (Chiroque and Rodriquez, 1999) (p. 1).

In 2001, Wood and Anderson wrote that cognitive psychologists focused recently on an individual's ability to examine their own thoughts. Therefore, "Metacognition is the ability to be aware of, monitor, and evaluate one's thinking. Metacognition does not occur automatically; it is the result of long-term development of the cognitive system" (p. 4). They researched Maitlin (1989) who said metacognition is the "knowledge of and awareness about our own cognitive processes" (p. 4). Wood and Anderson share that this a process that must be learned; we must learn to think.

In an article by Shimamura (2000) he states that:

> Knowing about what you know strikes at the core of metacognition. It depends on the ability to evaluate or monitor one's own cognitive processes, such as one's thoughts and memories, so that a reasonable assessment can be made about future performance. Based on this assessment, one can control one's thoughts and make decisions about how much further processing is necessary (p. 142).

Shimamura continues in his article that this self awareness does not reside in just one part of the brain, but is a result of the interplay of all the brain regions. This supports his theory that as one matures, metacognitive strategies improve and become stronger.

Kuhn's article (2000) looks at a theory that seems to echo Shimamura (2000), and Wood and Anderson (2001) in that metacognition emerges early in life, develops over

time, and as an individual matures, the strategies a person uses to achieve higher levels of thinking and comprehending become more effective and powerful. Kuhn feels that awareness of one's own knowledge is critical to understanding, and that what occurs internally is ultimately affected by external forces. Kuhn states that an important accomplishment would be "people becoming aware of and reflective about their own thinking and able to monitor and manage the ways in which it is influenced by external sources, in both academic, work, and personal life settings" (p. 181).

Walczyk (2000) refers to metacognition as the reader's control over his/her thinking and the processing of the text. Metacognitive processing can seem demanding but in reality is not. Walczyk continues saying that "metacognitive stategies become efficient with practice" (p. 558). When a beginning reader first discovers and uses metacognitive thought processes there is a struggle, yet that eventually leads to a skill that is automatic and effortless.

Riggs and Gil-Garcia (2001) feel that metacognition "is being aware of and having control over one's own thought processes-knowing when, how, and why to use the skills and knowledge that one possesses" (p. 23). Riggs and Gil-Garcia say that metacognitive strategies are key to aid a student to attain higher levels of learning. Students need to keep track of what they are thinking, what they are doing, and the attitudes that they bring to the task at hand. Students who are aware of their thought processes have learned to learn; they plan and are self correcting.

In 1998, Hall and Myers wrote a paper from an ongoing project on the teaching and learning of reading in primary classrooms in England and Ireland. They discovered

that metacognition is simply "thinking about thinking" (p. 8). Hall and Myers found out that with metacognition the control is with the individual reader and how aware the individual is of his/her thought processes will determine the effectiveness, or ineffectiveness, of the metacognitive strategies. As with some previous authors, Hall and Myers realized that metacognition needs to be taught; children aren't born with these thought processes.

Jacobson cites Borokowski, Carr, and Presley (1987) who wrote that metacognition is the "self-monitoring of, and conscious use of learning strategies" (p.582). Jacobson reflects what others have also shared; that this is not an automatic process, but a process that needs to be developed within the cognitive system. Students who possess metacognitive processes have a knowledge base, reflect while reading, self-assess, and gain feedback from appropriate sources. Jacobson continues in her article saying that it is a joint effort of both the student and the teacher to maximize the self awareness in the student that fosters learning. Jacobson believes that metacognition is the vital element to revitalizing the educational system. She states "If we do not recognize what the students know, what they believe that they know, or more important yet, what they do not know, efforts to improve education will be futile" (p. 584).

McKeachie (2000) shares his ideas on metacognition stating that it is thinking about one's learning and thinking. When it comes to metacognitive strategies students need to plan, check the initial plan, choose other strategies if the original plan isn't working - all this he calls self-regulation. This puts the student in control of his thought and learning processes. McKeachie states, "If they are reading, do they understand the

material well enough to explain it? If the answer is "No", they need to go back and review what they have done or seek help from someone who does understand" (p. 13).

Mokhtari and Reichard (2002) reflect on several researchers who discuss the topic of metacognition. They define metacognition as the "reader's cognition about reading and the self-control mechanisms they exercise when monitoring and regulating text comprehension" (p. 249). Mokhtari and Reichard continue by sharing that readers who exhibit metacognitive awareness plan, monitor, evaluate, and make sense of what they read.

Ediger (2000) simply defines metacognition as what the "student thinks about thinking" (p.3). The student needs to rehearse, or practice, what has been learned through reading and hopefully will realize that there is more to learn. With role modeling, students will become intrinsically motivated to learn more and go further with their reading activities and strategies.

In a study conducted in Croatia, Kolic-Vehovec and Bajsanski (2001) came to the conclusion that metacognition is considered "knowledge about one's self thinking, about different types of tasks and about reading strategies" (p. 2). Like other authors , Kolic-Vehovec and Bajsanski realized that as students mature they have more metacognitive strategies in place and that students need to be taught these strategies. Students seem to learn these strategies if properly motivated to learn. They also discovered that as students learned these metacognitive strategies and they became automated, students would most likely apply them to their reading tasks more readily.

Gil and Labar's paper (2001) states that metacognition is an understanding of your

own stored knowledge. They say that one needs to evaluate tasks prior to reading, look for meaning during reading, and reevaluate throughout the reading. As a student reads, he or she needs to use his or her own thought processes, know when to use certain skills when the reading becomes difficult to understand, and access prior knowledge to gain the full meaning from the text. Gil and Labar share that teachers need to model for students what metacognition is so their students can see and hear the thought processes that occur as one reads a text.

Lin (2001) states that metacognition is the ability to "understand and monitor one's own thoughts..." (p. 23). Lin believes that students are metacognitive if they are engaged in thinking, their learning tasks, and their social contexts. Lin feels that teachers need to model metacognitive strategies since students need to be taught these strategies; they are not born with them. After the teacher models them, the students need time to practice the strategies in an environment that promotes self as learner. Lin feels that this will help the students grow in metacognitive awareness.

Prescott (2001) feels that students need to be self guided. To her, metacognition refers to the learner's control over their cognitive processes that involve planning, thinking, monitoring, and evaluating the comprehension process. Prescott adds that "The teaching of learning strategies...has been found to be effective in educational settings to facilitate attention, motivation, learning, memory, and comprehension..." (p. 328). Students need to be taught how to promote their self-sufficiency and to be motivated to learn.

Metacognitive Strategies

Metacognitive strategies are necessary to aid students in comprehending a text and achieving higher levels of thinking. The strategies are many and varied, and all rely on teacher modeling and motivation to encourage the students to make these strategies their own. The frequency and duration of modeling can make the difference between a child who will become a successful reader and a child who never succeeds with the written word.

Modeling and Motivation

Pressley, Burkell, Cariglia-Bull, Lysynchuk, McGoldrick, Schneider, Snyder, Symons, and Woloshyn (1990) feel that metacognitive strategies need to be taught since they are not an automatic response. Students need to know not only what these strategies are, but when and where to use these strategies as they read. Pressley, et al. believe that teachers need to focus on a few strategies at a time, and while teaching the strategies they should be modeled. They continue by stating that students need to practice these strategies to reinforce them, and when the teacher notices students using the metacognitive strategies recently taught, the students need to be praised to increase motivation and use of the strategies. Finally, Pressley, et al., in quoting Brown, Bransford, Ferrara, and Campione (1983), say "Students are most likely to be motivated to use strategies if they are aware that strategic performances do in fact enhance performance" (p. 15).

Lock, Babkie, and Provost (2002) focus on strategy success for elementary school students. Lock, et al. suggests that teachers "design strategies that meet both your needs

and the needs of your students. Remember to focus on only a few...at a time..." (p.173). Lock, et al. continue by saying that teachers need to teach each part of the strategy by modeling and demonstrating techniques that are age appropriate; giving a rationale to the students "why" the strategy is necessary will help them to make the strategy their own. Locke, Babkie, and Provost also suggest to practice daily the strategy that was recently introduced and to post the strategy in the room for easy reference. Lock, et al. also urge teachers to teach only one strategy at a time and only move forward when they feel that the students have learned that particular strategy.

Mokhtari and Reichard (2000) share that students who are aware of their comprehension processes enhance their instruction. Students need to be taught comprehension strategies to the point of automaticity, after which the teacher needs to focus on explaining to the students when, where, and how to use these metacognitive strategies. Students who have learned this skill have become empowered readers.

Jacobson (1998) refers to apprenticeship which "involves teaching the student to use a variety of learning strategies which increase student ability through interaction with the teacher. As the student becomes more proficient...the teacher withdraws instruction..." (p. 587). Jacobson feels that it is important for teachers to model skills and strategies so that the student can become independent in the realm of metacognition. If a student is independent he or she will ask discussion questions with his or her peers, brainstorm ideas, make connections between stories and real life events, and make personal assessments of what is known.

Paris and Paris (2001) comment on how "Children must know the types of available strategies that lead to understanding and success before they will be able to implement them" (p. 93). Paris and Paris continue that it is the teacher who needs to share the strategies with the students; what is the strategy and when to use the strategy. Instruction of the strategy should be included with regular instruction to make the learning more meaningful to the student.

In a study conducted by Durley, Emlen, Knox, Meeker, and Rhea (2001) to implement a program to improve reading comprehension across the content areas, it was discovered that "Reading comprehension strategies need to be taught in order to develop students' ability to read and understand text independently" (p. 39). Durley, et al. state that direct instruction is needed to explain these strategies along with modeling the strategies. After the teacher models the strategies to be learned, students need time to practice and use the new strategies. Durley, Emlen, Knox, Meeker, and Rhea also state that if students are given books appropriate to their reading level while learning new strategies it will encourage motivation to learn the new strategies. Additionally, teachers who see students using the strategies that they have taught need to reinforce students to continue utilizing them for it will "increase the students' expectations for learning to comprehend material" (p. 40).

Pressley and Wharton-McDonald (1997) focus on the importance of teacher modeling and explanations in regard to strategy instruction. Students need to be shown what the strategies are and how to use them, and then be given ample opportunity to practice the strategy in a reading situation. Pressley and Wharton-McDonald state that

"As students become increasingly independent in their strategy use, feedback and instruction are reduced" (p. 454). Teachers also need to encourage the transfer of strategy use to a variety of texts other than narrative.

McKeachie (2000) speaks on motivation stating that if students don't have the skills, or if they have the skills but are not sure how to use them, they won't be motivated to use them. Students need to become intrinsically motivated by realizing that "they can learn effectively and if they see learning tasks as relating to their own lives and interests" (p. 4). McKeachie continues by saying that if students are taught to evaluate their work they will feel ownership and a sense of progress. "Mastery is an important source of motivation for learning" (p.6). Finally, he mentions that if a teacher shows enthusiasm for teaching a strategy it will have a positive effect on the students as they work on learning the strategy.

In 2001, Justice and Dornan looked at the motivation factors between traditional-age and nontraditional age college students and how it relates to metacognition. Justice and Dornan discovered that both sets of college students were motivated to learn. It was interesting to note that traditional-age students were externally motivated while the non-traditional age students were intrinsically motivated. They also found in their study that comprehension-focused strategies were adopted by the older students and that changes in metacognitive strategies continued into adulthood. Both sets of students were "influenced by prior academic and life-world experiences" (p.237) yet the "metacognitive knowledge and abilities of older students may differ from those of traditional-age students" (p. 237).

Self as Learner

In an article written by Lin (2001) he not only defines metacognition but looks at the idea of the self as learner. In particular, Lin addresses the effect of "social or peer modeling, community participation and feedback on student strategy learning..." (p. 27). Lin believes that social models are important for when students observe others using these metacognitive strategies, as they realize that they too can implement them into their reading and problem solving. The basic human need for survival motivates students to set personal goals to learn strategies and to interact with peers and teachers when learning and practicing new techniques to reach higher levels of thinking and comprehending. Lin also comments on the school environment and how it affects the self as learner. Teachers and parents should ask, "Is this social environment designed to help the children flourish and grow?" (p. 30). If the environment is not conducive to learning, the student will be hindered as he attempts to learn the necessary strategies to become a stronger reader.

Paris and Paris (2001) speak on classrooms that are student centered in which students are cognitively engaged in open ended activities; these activities also promote intrinsic motivation. They believe that "As children develop, they are better able to coordinate actions with goals, better able to reflect on their own thinking and better able to plan and monitor complex and abstract sequences" (p. 96). Paris and Paris suggest that students who are in charge and motivated to learn these strategies will be the successful ones. Students who are in charge of their learning move to a deeper level with their learning, evaluate what they know, and periodically assess themselves.

In McCombs' (2001) article, she shares "quality learning is learning that engages students" (p. 184). Classrooms need to encourage students to be curious, creative, and to bring out the imagination. The curriculum needs to be shaped around these ideals just mentioned; ideals that are found naturally in children. McCombs feels that if a student is in an environment that is learner centered, focus will be on the individual learner. Teachers will be focused on each child, bringing each child to their highest level of motivation and achievement in the cognitive area.

Pressley, Wharton-McDonald, Allington, Block, Morrow, Tracey, Baker, Brooks, Cronin, Nelson, and Woo (2001) speak on most-effective-for-locale teachers and how they "encouraged students to do things for themselves" (p. 48). Students were taught to be independent and were so engaged academically that they seem to be lost in their work. These teachers seem to be challenging their students to reach higher levels of cognitive thought processes.

Aleven and Koedinger (2002) reviewed a metacognitive strategy that involved the computer program called the "Cognitive Tutor". They share in this theory that students learn best when they are involved with self explanation; it is better for them to give explanations than to receive them. Alevan and Koedinger looked at computer instruction and how it assists students with this strategy of self explanation. Self explanation "might help students integrate visual perceptual and verbal declarative knowledge and enhance learning" (p.152). By working with the "Cognitive Tutor" students are assigned problems on an individual basis, receive feedback and even hints. This program requires students to explain their answers to support their explanations. By working with this

computer program students fill in the gaps in their knowledge and build new declarative knowledge on their own.

Think Alouds and Scaffolding

In 2002, Burns, Roe, and Smith stated that think alouds "involve the overt, verbal expression of the normally covert mental processes readers engage in when constructing meaning from texts" (p. 182). Students need to learn from teachers and adults what goes on in our minds while we read; the questions we ask, what prior knowledge we bring up, predictions we make, inferences, and how we clear up confusing passages in the text.

Caldwell, Jennings, Lerner, and Richek (1996) share that in order for students to learn comprehension strategies "teachers model the thinking process out loud to his or her students" (p.160). Caldwell, et al. say that this modeling could be on predictions, mental images, correcting misunderstandings, or main ideas and details.

Readence and Tierney (2000) comment on think alouds saying that in order for readers to develop reading behaviors they need to know the cognitive processes that develop. Poor readers especially need to monitor and develop these strategies. As teachers describe their thoughts students can see and then practice the strategies to make them their own. By thinking aloud, Readence and Tierney feel that teachers make students more strategic and give them a positive outlook in regard to reading.

Along with think alouds teachers need to scaffold. This is a process in which as teachers teach new strategies they slowly turn over, or give control, of the process to their students. This helps students to feel the support they need until they are in control of their learning process. In 2001, Bruce and Robinson initiated a study involving the reciprocal

teaching approach. As part of this study, Bruce and Robinson found that a "scaffolded instructional approach was used in which students were engaged in a number of activities designed to help them become familiar with the use of the strategies..." (p.12). By using this approach they found that students became more in charge of learning the strategies and made them their own in the end.

Pressley, Wharton-McDonald, Allington, Block, Morrow, Tracey, Baker, Brooks, Cronin, Nelson, and Woo (2001) share in their study that most-effective-for-locale teachers provided support to their students to allow them to make progress but "stopped short of doing the task for students" (p. 48). Pressley, et al. share about a first grade literacy teacher and how she did more than monitor her children's progress. The teacher "cued materials or scaffolded instruction as students did appropriately challenging tasks, prompting use of skills and opportunistically reteaching skills to individual students..." (p.48).

Prior Knowledge

Brown, Dole, and Trathen (1996) say "Comprehension occurs when readers integrate their existing (or prior) knowledge with new information derived from the text"(p. 65). Brown, et al. state that schema aids in giving a framework to building up comprehension. Students need prior knowledge before reading a text so to make them active participants in the reading process. By activating the schema the text comes alive to the children. Brown, et al. continue by sharing three types of comprehensive knowledge. The first is declarative knowledge which can be found in story content instruction. This activates prior knowledge and helps students focus on concepts

and ideas most necessary for comprehension. The second is procedural knowledge, and the third is conditional knowledge; both are contained in strategy instruction. This is the time when readers learn how and why to activate prior knowledge on their own, when reading strategies are taught and a time when teachers model so students can see and learn to be independent readers.

Readence and Tierney (2000) share on the anticipation guide and how it activates prior knowledge by providing a list of statements that students react to prior to reading the text. The anticipation guide activates student discussion of facts and opinions and arouses curiosity of what they are about to read. Anticipation guides can also be used as a post reading activity by having the students go back over their responses and re-evaluate their choices.

Bluestein (2002), shares that for "many of our students with reading and learning difficulties, it is critical that we introduce the concept with an activity to draw upon their own prior knowledge" (p. 432). Bluestein continues that successful readers use prior knowledge to construct meaning from the text. Struggling readers need to be taught this strategy and its importance toward reading comprehension. One way to introduce this strategy is through characterization. Students can create word maps to describe a character in a story and then relate their web to themselves or to other people in their lives. This enables the students to see that what they read can be connected to an aspect of their lives.

In 1990, Pressley, Burkell, Cariglia-Bull, Lysynchuk, McGoldrick, Schneider, Snyder, Symons, and Woloshyn wrote that the prior knowledge students bring to the text

affects the interpretation of the text. They continue by saying that teachers need to activate students' prior knowledge to help them recall more information from the story after it is read. Prior knowledge can be activated by having a discussion that benefits all students prior to reading. Pressley, et al. quote Paris and Lindauer (1976) in saying that "...children often do not activate their prior knowledge spontaneously while reading even when they possess knowledge relevant to the topic" (p. 63). It is up to the teacher to demonstrate to the students how to activate their prior knowledge and the importance of doing so before engaging in a reading activity.

Riggs and Gil-Garcia (2001) state that prior knowledge connects new knowledge with what the student already knows. They continue speaking on the schema theory referring to it as a "way in which prior knowledge is stored in one's memory and organized into a framework, or schema" (p. 33). This schema helps a person to organize his or her thoughts and assists him or her in planning and executing tasks. Riggs and Gil-Garcia believe that by having this schema, or prior knowledge, that students can make the leap from the abstract to the concrete. Teachers who activate this schema assist their students in creating positive attitudes toward learning new concepts and ideas.

Barton, Freeman, Lewis, and Thompson (2001) found that "Accessing prior knowledge is believed to be a strategy that can have great impact on comprehension instruction" (p. 14). Barton, et al. continue by saying that readers need to make connections while reading. This connection occurs during the activation of prior knowledge. Teachers need to set the stage for the story before it is read. This encourages students make the necessary connections between the text and self, the text and their

world, and the text with other literature that they have read.

In 2001, Gil and Labar stated in their paper that "prior knowledge is a composite of who we are and what we know about content and about strategies we have learned from both academic and everyday experiences" (p. 3). They continue that by tapping into prior knowledge students support the schema theory; comprehending what one is reading. By activating prior knowledge students will have a deeper understanding of the text and will remember new information better.

Durley, Emlen, Knox, Meeker, and Rhea (2001) feel that "students need to internalize new information and link it to prior knowledge in order to construct meaning from what they read" (p. 37). Durley, et al. continue saying that the information in their memories needs to be related to what they are about to learn. Students need to be actively engaged in making connections so that the new information becomes their own. Students who lack the necessary background knowledge should be given opportunities to be provided some kind of experience to help them make connections before reading a text.

Vocabulary

Caldwell, Jennings, Lerner, and Richek (1996) state several ways to introduce vocabulary prior to reading. The first is to list the new words on index cards and distribute different cards to each student. As the story is read by the teacher, the students listen for their words. As they hear their word the students raises their card. Another strategy to introduce vocabulary is to classify the words. The teacher writes the words on the board and the students create categories for the words. This can either be done individually or in groups. This helps the children to start thinking about the words and

what the plot of the story could be about. The third strategy Caldwell, et al. mentioned is the Predict-O-Rama. The teacher lists the vocabulary words on the board and then asks the students if the word could describe a character, plot, theme, setting, or action. The last strategy they describe is the Knowledge Rating Chart where the teacher gives the students a paper with the words listed on it and next to the words are columns where they check the rating: Know Word A Lot, Know Word A Little, Don't Know Word, Saw Word in a Book.

In Ediger's paper (2001) he lists several ways students can come about learning new words prior to and during reading of a text. Teachers may incorporate phonics instruction where students may associate individual sounds with symbols, or students may be taught syllabication skills "in which the learner is assisted to divide words into sound units" (p. 1). By learning syllabication students can learn to pronounce words that were once unfamiliar to them. Ediger continues by saying that students need to learn structural analysis; identifying prefixes and suffixes in words. By learning the meaning of prefixes and suffixes students will gain knowledge of unfamiliar words. Finally, he mentions the use of context clues. Teachers need to teach their students to use the words surrounding an unknown word to help them come to an understanding of that word.

Pressley, Wharton-McDonald, Allington, Block, Morrow, Tracey, Baker, Brooks, Cronin, Nelson, and Woo (2001) discuss the different letter and word recognition skills to which beginner readers should attend. In their study they found that teachers taught students "to attend to multiple cues...but without teaching their students to give priority to the picture, semantic-context, and syntactic cues over the letter- and sound-level cues"

(p. 47). Pressley, et al. continue sharing that the most-effective-for-locale teachers also taught word letter-sound analysis in the context of a reading or writing activity. They saw a balance between skills instruction and an immersion in literature and writing.

Durley, Emlen, Knox, Meeker, and Rhea (2001) believe that "In order to comprehend reading material effectively, students need to have a wide variety of vocabulary words in their long term memories. These words then become sight words" (p. 39). Durley, et al. looked at Qian's research in 1999 who felt that having a large vocabulary base was only the beginning; students need to have a deep knowledge of each word, too. Durley, et al. feel that it is the teacher who needs to help their students build rich and meaningful vocabulary; words that the students will internalize and help them comprehend the text that they are reading.

Riggs and Gil-Garcia (2001) see vocabulary as a low level skill yet "critically important to comprehension" (p. 55). They looked at vocabulary development from age six and found that children develop a listening vocabulary prior to a reading vocabulary. As children mature their vocabulary matures. Teachers need to be aware that students learn vocabulary best when it is taught in the context of their daily experiences. Riggs and Gil-Garcia note that teachers need to keep this idea in mind when students enter middle and high school, and the context of the vocabulary shifts from literature to technical and content-specific. In their research, Riggs and Gil-Garcia discovered that "The comprehension or understanding of the meaning of the word includes knowing or being able to make connections with prior associations, attributes, and experiences connected with the idea, a task that some students do much better than others" (p. 58).

Gil and Labar (2001) say that the key to learning is understanding word meaning. Understanding the words one reads leads to comprehending the text. Gil and Labar feel that "Both students' expressive and receptive vocabularies must grow through direct instruction" (p. 4). They feel that learning word meanings in content areas is more important than learning words in a piece of literature. By teaching students how to master these words they become independent and strong readers.

Comprehension Monitoring

Durley, Emlen, Knox, Meeker, and Rhea (2001) came to the conclusion that comprehension skills can be improved if students are given a choice of what to read and if the books are at the appropriate level for the student. Students need to be given time to read on their own, and time to discuss the text either with their peers or with the teacher. Durley, et al. state that "comprehension is a mental process of constructing rather than extracting meaning from text...is a personal understanding of the text..." (p. 42). Even when students share their opinions with others, comprehension occurs within the individual.

Ediger (2001) writes that comprehension occurs in a broader scope within several strategies. The first he mentions is cause and effect where students learn that choices result in certain behaviors. Another strategy Ediger mentions is compare and contrast where students work with setting, plot, character traits, themes, and messages within the text. He continues with inferences and imagery stating that students need to understand text that includes metaphors, similes, and alliteration to name a few. Ediger concludes by saying that students need to read "for personal enrichment and growth" (p.3), and to

"develop interest, zeal and enthusiasm..." (p. 3). By teaching the students these strategies, text will have more meaning and therefore students will comprehend what they did not comprehend before.

Kolic-Vehovec and Bajsanski (2001) describe comprehension monitoring as "an executive function, essential for competent reading, which directs the readers' cognitive process as he/she strives to make sense of the incoming information" (p. 3). When they compared good readers with poor readers they found that good readers knew what cognitive strategies to use to help them in comprehending the text. Kolic-Vehovec and Bajsanski also discovered that older students had more comprehension strategies in place than younger students.

Walczyk (2000) states that "comprehension monitoring involves the detection and resolution of comprehension problems" (p. 562). He continues saying that some reading problems are subtle and a good reader will need to pause and question the text to check for consistency or to see if there are any contradictions. Walczyk feels that "active comprehension monitoring clearly requires a sustained shift of attention and ...a compensatory strategy" (p. 562).

Gillet and Temple (2000) state that good readers use prior knowledge and the information within the text to aid in comprehension. They also feel that good readers ask questions while reading and are naturally confident and curious. Gillet and Temple continue saying that good readers spend time reading books and therefore have a richer vocabulary which aids in comprehending the text.

Dowhower (1999) wrote about a comprehension framework to aid students in

comprehending the text through all the stages of reading. During the pre-reading stage, Dowhower says that students need to build on what they know and to focus on the strategy to be learned. While they are actively reading, students need to be given a purpose for reading, be engaged in silent reading and be able to monitor their own selves as they read. As the text is read, students should be able to stop and discuss parts of the story with peers or with the teacher to show that strategies are being applied. Finally during post-reading, or independent activities, Dowhower mentions that while alone or in small groups, students should work on retelling the story, sequencing of events, efferent or aesthetic responses. The comprehension framework links prior experiences the student has had to what is currently in the text. This framework helps the students to internalize the new information and to make it their own.

Reciprocal Teaching

Bruce and Robinson (2001) used the metacognitive strategy of reciprocal teaching. They tell us that reciprocal teaching has been characterized as "a dialogue between teachers and students for the purpose of jointly constructing the meaning of text" (p. 5). Bruce and Robinson state that reciprocal teaching involves four steps: predicting, clarifying, question generating, and summarizing. Initially the teacher models and explains each of the four steps and eventually the students take turns being the teacher. The modeling the teacher does acts as a scaffold until the students can do each step on their own. Bruce and Robinson state that reciprocal teaching can improve the comprehension of struggling readers.

Burns, Roe, and Smith (2002) share that reciprocal teaching promotes

comprehension. They too state the same four steps as Bruce and Robinson: predicting, questioning, summarizing, and clarifying. Burns, et al. state that when predicting students are given a purpose for reading; when questioning it is a time for group interaction; summarizing is a time for students to integrate the information from the text; and clarifying allows students the time to reread material that is unclear for them. Burns, et al. also say that in reciprocal teaching the teacher models each of the four steps and while scaffolding, the students eventually take over the learning process; in a sense becoming the teachers themselves.

Gillet and Temple (2000) discuss reciprocal teaching in their article, too. They say it is teaching in which a passage in the text is divided into sections, and after students read each section, the section is then summarized. After the summarization, questions are asked, clarifications are given, and predictions are made on the next section. This continues until the passage is completed.

In an article written by Pressley and Wharton-McDonald (1997) they state that reciprocal teaching engages students in four comprehension strategies: predicting, questioning, seeking clarification, and summarizing. As students made predictions on the text they became familiar with the topic of the passage they were to read. Student "teachers" pose questions on the readings from the text leading their classmates to clarify and summarize the material. The teachers role, according to Pressley and Wharton-McDonald, was to scaffold and model these four strategies until the students became familiar in facilitating them. Pressley and Wharton-McDonald state that "reciprocal teaching was more successful when there was more direct teaching of the four

comprehension strategies than when there was not..." (p. 454).

Directed Reading Thinking Activity (DRTA)

A pre-reading strategy is the DRTA, directed reading thinking activity. Both Gillet and Temple (2000) and Caldwell, Jennings, Lerner, and Richek (1996) state that a DRTA is a prediction strategy that occurs before reading begins, yet continues during natural breaks throughout the story. This allows students to check and revise their predictions as they continue reading. Caldwell, et al. feel that a DRTA is a good motivator for long stories to help keep the students interested in the story.

In Dowhower's article (1999) she state that the DRTA encourages "prediction and validation." (p.678) This metacognitive strategy can be applied to both narrative and expository text. Dowhower says that the reader first predicts from the title or picture, reads a segment of the text, then validates the original predictions and before the student continues to read, new predictions are made. The same steps are made until the text is completed: predict, read, validate, new predictions.

Burns, Roe, and Smith (2002) say that the DRTA puts the "student in control of the reading, makes children think as they read..." (p. 263). Burns, et al. continue saying that students need to first make a prediction from the title, then if there are pictures they are to make predictions from the pictures. Students are to then read a predetermined amount of text where they will stop, assess and adjust their predictions before making new predictions. Burns, et al. say this process continues until the material is completed.

Metacognitive Methods

Three groups of researchers describe ways to aid students to reach their potential metacognitively. They look at methods that enhance metacognition and improve the critical thinking skills of students. These methods may include some of the strategies listed in the previous section yet they should be separated since they bring students to new levels of metacognition in different ways. Following is a section which includes the Case Study Method, the Strategic Teaching and Reading Project, and Reading Apprenticeship.

Case Study Method

Wood and Anderson (2001) state that the "case study method is an effective way to develop higher order cognitive and affective learning and critical thinking ability, especially as it relates to learning, unlearning, and relearning" (p. 1). They continue by saying that students are proactive in the learning environment, and that students learn to be empowered to think and learn to question. Wood and Anderson believe that the Case Study Method is better than traditional teaching since it involves higher levels of cognitive skills of metacognition. They say "the case study method is essentially a universal problem solving method..." (p. 2).

The Case Study Method focuses on open-ended, or divergent questions, so that the atmosphere in the classroom is predominately democratic and interactive. Wood and Anderson discovered that in a classroom using the Case Study Method students were taught to visualize and think in varied ways throughout the learning process. This developed a self awareness within each individual regarding how they best learn metacognitively.

This led students into moments of "Aha!", where integration of old knowledge with new knowledge occurred. Wood and Anderson saw that when this integration took place students seemed to be in charge of their learning and that there was a balance between the students and their environment. In conclusion Wood and Anderson feel that it is the teacher's responsibility to prepare and lead their students in "a series of open-ended and probing discussion questions" (p. 6). As a facilitator and guide, the teacher is important in leading his/her students to this higher level of metacognitive thinking.

Strategic Teaching and Reading Project (STRP)

In their research, Gil, Osiecki, and Juarez (2001) speak on a metacognitive method that greatly improves students reading comprehension. The Strategic Teaching and Reading Project works with any existing curriculum, materials, and objectives, and maintains the creativity and freedom of teachers. Gil, et al. share that STRP has five reading strategies: metacognition, prior knowledge, inference, word meaning, and text structure. By focusing on these five strategies teachers can help their students improve their comprehension skills. Gil, et al. state that "metacognition refers to possessing knowledge of what effect one's learning task and of how one controls learning such task" (p. 9). In their study, out of 35 metacognitive behaviors, the metacognitive strategy of prediction was the most predominate and used frequently among students in grades second through twelfth. Gil, et al. stress that metacognitive strategies facilitate reading comprehension and that they should be included not only in content areas and skill lessons but in all processes of teaching.

Reading Apprenticeship

Greenleaf, Schoenbach, Cziko, and Mueller (2001) speak about Reading Apprenticeship, an instructional framework where the teacher "serves as 'master' reader of subject-area texts to his or her student apprentices..." (p. 89). In this program the teacher and students are partners in an inquiry into reading subject-area textbooks. Greenleaf, et al. feel that the purpose of the Reading Apprenticeship is to help students to become better readers of a wide variety of texts making the teacher's reading processes and knowledge known to his or her students. They continue by stating that it is the responsibility of the teacher to make subject-area texts make sense to the students by sharing the cognitive thought processes that occur as one reads.

Greenleaf, Schoenbach, Cziko, and Mueller (2001) describe the Reading Apprenticeship as a model in which students and teachers are interacting with four dimensions of the classroom life. The four dimensions are: social, personal, cognitive, and knowledge building. These four dimensions "draw on the adolescents' particular strengths and help them develop the knowledge, strategies, and dispositions they need to become more powerful readers" (p. 90).

The social dimension, as described by Greenleaf, Schoenbach, Cziko, and Mueller (2001) involves a safe classroom environment where students can share with their peers on a literary level. The personal dimension allows the students to focus on a purpose for reading and giving them time to self assess their goals as individual readers. The cognitive dimension focuses on reading comprehension and developing their mental processes as they read; also improving metacognitive strategies. Finally, knowledge building involves

students identifying with the text, working with the words, structure and genre to name a few. These four dimensions are linked together by metacognitive conversation, working on strategies, and reading a variety of texts. This method has teachers working with students instead of against them as they continue to grow as readers.

Students with Learning Disabilities

This paper has defined metacognition and metacognitive strategies in regard to good and poor readers. Poor readers are students who can read, yet who lag behind their classmates, who lack the strategies their peers have mastered, whose confidence with the written word is weak. This section will examine students who have learning disabilities and how metacognitive strategies can be taught to them.

Gersten, Fuchs, Williams, and Baker (2001) wrote that "students with learning disabilities possess the necessary cognitive tools to effectively process information, for some reason they do so very inefficiently" (p. 280). Gersten, et al. feel that this break-down occurs in the processing and metacognitive domains. Students with learning disabilities do not realize how to monitor their comprehension and therefore may not go back and reread confusing passages, or don't know how to help themselves with an unfamiliar words.

Gersten, Fuchs, Williams, and Baker (2001) say that learning disabled students can learn to cluster confusing sentences into topics and with the proper instruction know what makes up a paragraph. Children with disabilities do have a sense how a story is made up and have a inner feeling how a story will unfold. Learning new vocabulary is a difficult task for these children and they may need to encounter these words and their meaning

more often than non-learning disabled students.

Gersten, Fuchs, Williams, and Baker (2001) continue by looking at the skill of background knowledge. Students with disabilities have difficulties with summaries and story discussion, and are unable to identify the theme. Gersten, et al. feel that teachers would need to spend more time building prior knowledge with these students before reading the story so that the students are able to make the necessary connections.

In their article, Gersten, Fuchs, Williams, and Baker (2001) talk about Strategy Instruction and how it "seems to consistently improve students' ability to see relationships in stories, answer comprehension questions, and retell what they have read in a more focused fashion" (p. 296). With Strategy Instruction learning disabled students were given more structure, they seemed to be better able to focus on the task at hand, and their feedback improved greatly.

Finally, Gersten, Fuchs, Williams, and Baker (2001) share how teachers can help their learning disabled students by taking the time to familiarize themselves with the title, the beginning paragraph, and how this chapter is related to the one previous. Teachers can have their students look at the illustrations and discuss them, and write down what they think the story might be about. Also, Gersten, et al. mention how "think alouds" will also aid these students to know what goes on cognitively as one reads.

Rankin-Erickson and Pressley (2000) looked at the instructional practices of special education teachers from different sections of the United States. All of these teachers were engaged in a Whole Language Reading program within their schools. Rankin-Erickson and Pressley wanted to see how the Whole Language program

influenced children in special education and what exactly the teachers taught to their students in their schools. Rankin-Erickson and Pressley discovered that all the teachers surrounded their students in a literature rich environment, where the students' work was put on display. They also list the teachers "reading stories to students...rereading stories weekly as a vehicle for instilling interest and creating an environment rich in shared stories" (p. 213). They found that teachers instilled strategies that increased student motivation and modeled a love for reading and writing.

Rankin-Erickson and Pressley (2000) saw that teachers created an "I can read" attitude in their classrooms, especially for the students who were severely learning disabled. The teachers in the study shared how they took interest in their students wanting to take ownership of their work and encouraged their students to plan goals for themselves.

The teachers in the Rankin-Erickson and Pressley (2000) study shared how they taught skills in isolation and in a "systematic fashion..." (p. 220). The teachers taught their students comprehension and critical thinking skills needed for comprehension of the text. They also stressed with their students the need for background knowledge before reading a story. Rankin-Erickson and Pressley found in their study that even though these teachers were told to teach Whole Language they were also inserting a skills based instruction to aid their students to succeed with reading.

In regards to this research, we can see that when given the proper instruction, students with learning disabilities are able to learn and even master metacognitive strategies. These students need to be immersed in an environment that is language rich

and be guided by teachers who are willing to go that extra mile and work with their students at their pace. Being learning disabled doesn't mean that metacognition doesn't occur. It occurs; just on a different time schedule than children in a regular education classroom.

What Makes a Good Reader

Dowhower (1999) tells us, "Before even beginning the first sentence of a text, knowledgeable readers know how to approach and frame a reading experience with a sense of purpose, need and direction" (p. 675). Dowhower continues that stronger readers have learned comprehension strategies from their teachers and use those strategies when reading independently. Knowledgeable readers have a focus while reading, give themselves a purpose before reading a text, and monitor themselves as they read. Dowhower concludes by stating that strong readers are more willing to do independent activities after reading than those who struggle while reading a book.

Pressley and Wharton-McDonald (1997) say good readers set a purpose for reading before they even look at the text, and know what they will get from the text prior to reading it. In other words, "mature readers approach a text with a purpose" (p. 450). They continue by sharing that mature readers can determine if what they are reading is no longer relevant to their original purpose and will stop reading the material. Sometimes mature readers will stop and reflect on what they read, sometimes changing their purpose for reading the text.

In a 1996 article, Caldwell, Jennings, Lerner, and Richek, state that we need to

give students a wide exposure to language and get them actively involved in the learning process. By showing students that learning can be fun, Caldwell, et al. believe that children who read will become even stronger readers and see that it is necessary for living in the adult world. Caldwell, et al. say a way to whet the appetites of young readers is to read to children a language rich book. This will encourage them to sharpen the skills and strategies they already know and plant the seed to learn new ones. By doing this Caldwell, et al. feel this will give students a goal to some day be able to read that language rich book on their own.

Schwartz (1997) states that smarter readers ask good quality questions, have a rich source of strategies, and take cues from the text to aid in their comprehension. Good readers use their knowledge of the known world and their language to solve a problem while reading. Schwartz says that good readers know the sounds that letters make and match those sounds as they read words within the text. Schwartz believes that teachers need to look at the errors that students make while reading in order to understand where the child has a deficiency in reading. It is only then that we can really help a struggling reader succeed.

Bruce and Robinson (2001) discovered in their research that poor readers benefited the most when training was directed toward them. Yet all students showed improvement in their reading abilities when teachers "explored a variety of options for implementation, including ways of effectively providing strategy instruction for the whole class..." (p. 30). Bruce and Robinson saw how peer tutoring and cooperative learning groups aided in reading improvement. Most importantly reciprocal teaching of

comprehension skills was also effective in aiding children with reading difficulties.

In 2000, Walczyk wrote that "the younger and less experienced often fail to monitor their comprehension and fail to use effective repair strategies when a problem has been identified" (p. 558). He continues by stating that students who are successful comprehenders have more strategies and are likely to use these strategies while they read. Teachers need to provide metacognitive strategy training to less capable readers to strengthen their abilities and help them rise to the level of good readers.

Barton, Freeman, Lewis, and Thompson (2001) tell us that it is important for teachers to teach students to be strategic and understand what goes on cognitively as we read. Teachers should include in their instruction in-depth explicit strategy instruction for long time periods, with the teacher modeling these strategies. Barton, et al. continue by saying that "readers with poor reading skills do not use metacognitive skills to help them comprehend their reading" (p. 5). Poorer readers focus more on decoding than on metacognition. A teacher's goal should be to move their students to higher levels of cognitive thinking and the use of metacognitive strategies as they read. Reading instruction can help poor readers become proficient and independent.

Pressley, Burkell, Cariglia-Bull, Lysynchuk, McGoldrick, Schneider, Snyder, Symons, and Woloshyn (1990) say that "...a good strategy user is one who possesses a variety of strategies and uses these procedures to meet cognitive challenges" (p. 8). Pressley, et al. continue saying that good readers know when, where, and how to use these cognitive strategies and are in control of their thinking processes as they read. Good readers, according to Pressley, et al., meet their goals and are efficient metacognitively.

In 2001 Riggs and Gil-Garcia wrote "Strategic learners survive academically. The rest struggle or fail" (p. 15). Students who are strategic in their reading incorporate and use a variety of metacognitive strategies. Some of these are: setting a purpose for reading, scanning, predictions, summarizing, monitoring self understanding, and making charts or webs to record story action. Riggs and Gil-Garcia believe that it is the role of the teacher to model these strategies to their students so that they can see what occurs covertly as we read. By modeling these strategies, students who are not strategic can learn and practice these metacognitive strategies to become better readers.

Mokhtari and Reichard (2002) believe that skilled readers differ from unskilled readers since they tend to be "aware of what they are reading; they seem to know why they are reading; and they have a set of tentative plans or strategies for handling... problems and for monitoring their comprehension..." (p. 249). Unskilled readers spend most of their energies on decoding words instead of on the comprehension process. They do very little self monitoring and other cognitive tasks.

In conclusion, students who are strong metacognitively and use these strategies are able to converse with you regarding what goes on inside their minds as they read. In 1998, Hall and Myers sat down with a student named Linda and discussed with her what kind of reader she thought she was. Hall and Myers discovered in their conversation that Linda enjoys reading for pleasure at home and in school. They gave Linda a book she never read and observed that Linda flipped through the pages looking at the pictures, read the headings out loud and at the advice of the researchers scanned a page to determine if the book is at a level Linda is able to read; it was. Hall and Myers feel that Linda is a child

who uses her metacognitive tools of scanning, predicting, and use of vocabulary to decide if the book is at her level.

As Hall and Myers (1998) continue in their interview they also discover that Linda is intrinsically motivated to read and ask Linda what she does when she comes to an unfamiliar word. Linda's response is "I'd split it in half...I just look at the first, the middle and the last" (p.11). Linda exhibits self reliance and responsibility for her reading. Finally Hall and Myers realize that Linda can differentiate between the types of genre by showing her another book and having her compare it with the first one they gave her.

As teachers we need to help our students become as metacognitively independent as Linda. Students who know whether or not they are comprehending will know what strategies to employ to get back on track. We need to not be afraid to model, or think aloud, to our students what goes on covertly in our minds. It is only by modeling that students will see and understand the cognitive thought processes that occur during reading. By "seeing" and hearing these thoughts our students will be encouraged to practice these metacognitive strategies and make them their own.

Current Investigation

Recognizing that metacognition is a process that needs to be taught and develops as a person matures, this study investigated what metacognitive strategies were modeled, taught, and applied through various grade levels. The research hypothesis was that there would be more strategies modeled, taught, and applied as children progressed in the higher grade levels.

Method

Participants

94 Elementary teachers, 124 Middle School teachers, and 70 High School teachers, in three different school districts in Middlesex County, New Jersey, were the participants of this study. Teachers included those who taught in regular education, special education, and resource room; both male and female.

Materials

A survey instrument was developed to address the research question cited above. The instrument (see Appendix A) consisted of the teachers stating the grade/s and the district in which they taught. This was followed by fourteen metacognitive strategies where teachers mark if they modeled, taught, and/or saw students apply the strategy in their classrooms.

Procedure

Once permission had been granted by district assistant superintendents and building principals, the researcher administered the survey to regular education, special education and resource room teachers. The survey was administered at the beginning of

the faculty meeting to all the above named teachers. The researcher explained the instructions to the teachers at this time. The survey completion took five to ten minutes. The surveys were collected after the participants finished filling them out.

Data Analysis

The researcher sorted the data collected in the surveys by elementary, middle, and high school levels. The researcher than looked at the findings across the elementary, middle, and high school levels to test the hypothesis. The researcher examined the data quantitatively by creating a tally sheet and listing the strategies modeled, taught, and observed throughout various elementary, middle, and high school levels. Percentages of the frequency of modeling, teaching, and applying each strategy were calculated.

Time Line

The researcher obtained permission from district assistant superintendents and building principals in December and January. Appointments were scheduled in December through February to attend faculty meetings in each school in order to administer the survey. The researcher reported the results in March.

Results

The results of the survey are as follows.

Make and Check Predictions from Titles and Pictures

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary:	89%	89%	87%	0%	0%
Middle School:	70%	68%	69%	9%	3%
High School:	56%	59%	64%	14%	4%

Use of Anticipation Guides

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary:	56%	64%	34%	20%	8%
Middle School:	50%	50%	47%	21%	5%
High School:	35%	60%	34%	26%	4%

Use of Context Clues

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary:	89%	90%	84%	0%	1%
Middle School:	70%	79%	82%	2%	1%
High School:	67%	73%	69%	7%	1%

Summarization

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary:	86%	85%	84%	3%	1%
Middle School:	67%	77%	77%	6%	1%
High School.:	54%	69%	69%	4%	0%

Reread

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary:	67%	76%	84%	2%	2%
Middle School:	52%	66%	73%	3%	4%
High School:	34%	56%	69%	1%	4%

Reflect, Retell, and Discuss with Peers

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary:	71%	77%	83%	0%	2%
Middle School:	65%	64%	85%	0.8%	1%
High School:	50%	54%	76%	7%	2%

Reader Identify Strengths & Weaknesses in Reading

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary:	32%	47%	49%	23%	6%
Middle School:	34%	37%	41%	36%	7%
High School:	20%	36%	43%	4%	7%

Reader Focuses on Specific Problem Until Solved

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary:	49%	54%	58%	14%	4%
Middle School.:	40%	56%	61%	14%	9%
High School:	40%	56%	69%	11%	7%

Set a Purpose for Reading

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary.:	84%	82%	59%	1%	1%
Middle School:	66%	78%	57%	4%	2%
High School:	61%	70%	61%	1%	4%

Activate Prior Knowledge

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary:	88%	81%	69%	0%	1%
Middle School:	68%	74%	73%	1%	0.8%
High School:	63%	67%	74%	1%	7%

Assessment

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary:	38%	59%	68%	3%	2%
Middle School:	52%	62%	59%	5%	4%
High School:	43%	67%	69%	7%	5%

Stop When a Difficulty Arises

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary:	54%	69%	54%	7%	5%
Middle School:	57%	65%	66%	7%	2%
High School:	37%	43%	44%	19%	8%

Independent Reading

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary:	53%	46%	85%	3%	2%
Middle School:	35%	34%	69%	23%	0.8%
High School:	23%	36%	63%	27%	4%

Select Own Reading Material

	Model	Direct Instruction	Students Apply	Not Applicable	No Response
Elementary:	44%	46%	81%	11%	0%
Middle School:	27%	34%	56%	34%	5%
High School:	21%	33%	41%	33%	5%

Discussion

The strategies were modeled, taught through direct instruction, and applied by the students most often at the Elementary school level. Additionally, the strategies were modeled, taught through direct instruction, and applied by the students more often at the middle school level than at the high school level. For 8 of the 14 strategies this pattern was consistent. Minor exceptions to the pattern were reported for the strategies of Focusing on Specific Problem Until Solved, Setting a Purpose for Reading, and Activating Prior Knowledge. More noticeable variations to the pattern were found for the strategies of Use of Anticipation Guides, Assessment, and Stopping When a Difficulty Arises.

The researcher feels that the cause for these findings maybe as follows. At the Elementary Level the students might have more opportunities to read and practice these strategies. It is possible that the Elementary teachers were younger (this data wasn't collected) and had newer teaching methods than those teachers of the High School Level. The curriculum of the Elementary Level might be different than that of either Middle or High School, which allows for more time for Language Arts instruction and/or more time for students to engage in literacy; either in direct instruction or for pleasure reading, thus practicing the strategies. Classroom instruction at the Elementary level may include more small group instruction and center based instruction which could account for the use of more strategies.

In comparing her research with what is known, the researcher set out to find if there are more metacognitive strategies in place as children mature. The prior research

tells us that as children get older they know more strategies, so they therefore apply more metacognitive strategies as they read and comprehend text. The researcher feels that even though her results show that there are more strategies modeled, taught, and applied at the Elementary School level, she feels that if the students were given the opportunity more students might apply strategies that they were taught. What is different from the researchers outcome to that of the known research is that her results show the opposite; that more strategies are modeled, taught, and applied with the younger children. The researcher feels that older children probably have the metacognitive strategies, yet aren't given the opportunities throughout their day to apply them. It would be interesting to see if the curriculum were changed how that would affect students of Middle and High School levels in applying those metacognitive strategies taught at an earlier age.

The researcher had the following limitations to her research. There were a few scheduling conflicts with faculty meetings and time constraints with the course syllabus in which the researcher had to graciously thank the school principal for his/her time since the researcher would not be able to get to the school before the end of February. The snow days caused school cancellations, and some faculty meetings could not be rescheduled. There was a delay in receiving permission from the third school district in Middlesex County due to a needed change of districts in late December and change of Administrative Staff within the district. Finally, in one of the High Schools that was surveyed, when the researcher went to the faculty meeting, she was expecting to survey the complete faculty and was only presented with the Language Arts Staff. Those surveys were also not used in the final results.

For future research, the researcher feels that more High School staff, including regular education, special education and resource room, should be included in the surveying. The purpose of this would be to see if the number of teachers who modeled and taught the strategies would increase along with the number of students who applied the strategy. This would make the results of the survey more valid and to help the researcher see if more metacognitive growth continued at the High School level. Also the researcher would change the survey instrument; she would have fewer strategies, and possibly remove the category of "Model" since some teachers were confused between this and "Direct Instruction".

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Appendix A

Please answer this questionnaire as best as you can. For each strategy, mark each category that applies; there may be 1, 2, or 3 checks per strategy.

Grade/s you teach _____

District _____

Reading Strategy	Model (Demonstration)	Direct Instruction	See Students Apply	Not Applicable
Make and check predictions from titles and pictures				
Use of anticipation guides				
Use of context clues				
Summarization				
Reread				
Reflect, retell, and discuss with peers				
Reader identify strengths & weaknesses in reading				
Reader focuses on specific problem until solved				
Set a purpose for reading				
Activate prior knowledge				
Assessment				
Stop when a difficulty arises				
Independent reading				
Select own reading material				

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